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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,250	02/06/2004	Henry Allen Hill	114096.125 US2 (ZI-39)	8641
23483	7590	07/11/2006	EXAMINER	
WILMER CUTLER PICKERING HALE AND DORR LLP 60 STATE STREET BOSTON, MA 02109			ROJAS, OMAR R	
			ART UNIT	PAPER NUMBER
			2874	

DATE MAILED: 07/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/774,250	<b>Applicant(s)</b> HILL, HENRY ALLEN	
	<b>Examiner</b> Omar Rojas	<b>Art Unit</b> 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-35, 37 and 38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 28-35 is/are allowed.
- 6) ☒ Claim(s) 1-14, 23-27, 37 and 38 is/are rejected.
- 7) ☒ Claim(s) 15-22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>Detailed Action</u> .                  |

## DETAILED ACTION

### *Response to Amendment*

1. With regards to the amendment filed on April 27, 2006, all the requested changes to the claims have been entered. Claims 1-35 and 37-38 are pending.

### *Response to Arguments*

2. Applicant's arguments with respect to claims 1-14, 23-27, and 37-38 have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claims 1-7, 9-14, 23-27, and 37-38 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by US 2004/0013384 A1 to Parker et al. ("Parker").**

*In re* claims 1, 2, and 27, Parker discloses a multiple source array (e.g., Figure 2) comprising:

a guided-wave structure in which one or more guided-wave modes are excited during operation, said guided-wave structure including a planar dielectric core 10, a first cladding layer 13 covering the dielectric core 10, and a second cladding layer 12 covering a second side of the dielectric core 10 that is opposite from the first side; and

an array of guided-wave cavities containing dielectric rods 11, extending transversely from the dielectric core 10 into the first cladding 13 and forming an array of apertures through

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which optical energy that is introduced into the core exits from the core (as seen in Figures 1 and 2), each cavity of the array of cavities causing said optical energy to exit from the core through each aperture of the array of apertures. Each cavity of the array inherently has one or more transmission modes that during operation couple to the one or more guided-wave modes of the guided-wave structure because the structure of Parker is identical to that of the claims. *See* Parker at paragraphs [0039]-[0043].

*In re* claim 3, the guided-wave structure of Parker inherently generates excited-wave modes in response to receiving a source beam characterized by a wavelength  $\lambda_0$  because the structure of Parker is identical to that of the claim. Furthermore, the cladding layers 12 and 13 inherently have thicknesses such that leakage represents a negligible loss to the guided-wave modes because the cladding layers 12 and 13 have a structure that is identical to that claimed.

*In re* claim 4, the recited limitation(s) are also considered to be inherent in Parker since his guided-wave structure, including the first and second cladding layers, has the same structure to that claimed.

*In re* claims 5-6, the recited limitations are disclosed by Parker in paragraph [0040].

*In re* claim 7, the core 10 contains silicon which is the same as the dielectric of the rods 11.

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*In re* claim 9, the guided-wave structure is designed to operate at a many different wavelengths (paragraph [0013]). The cavities holding rods 11 also have a selected width. Therefore, the limitations of claim 9 are considered to be inherently present in Parker because there would exist at least one wavelength  $\lambda_0$  among the many possible wavelengths that can be used in Parker such that the width of the cavities is on the order of  $\lambda_0/2n_f$  wherein  $n_f$  is the index of refraction of the dielectric in the cavity.

*In re* claim 10, the guided wave cavities holding rods 11 inherently have a selected width so that there exist transmission modes of the cavities that couple to excited wave modes of the guided wave structure because they have the same claimed structure.

*In re* claim 11, the array of cavities is two-dimensional as seen in Figure 4.

*In re* claim 12, the cavities holding rods 11 are inherently sub-wavelength in size because they are part of a photonic bandgap structure. See paragraph [0037].

*In re* claim 13, a source the delivers an optical beam to core 10 is inherently present in Parker because there is light present in the core 10.

*In re* claim 14, the recited limitation(s) are considered inherently present in Parker because the guided-wave structure of Parker has the same structural features to those of the claim.

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*In re* claim 23, the dielectric core 10 can be made of silica, which is a material that inherently transmits in the UV.

*In re* claims 24-25, the atmospheric air that is inherently above cladding 13 in Parker can be considered a compensating layer that meets the specified limitations.

*In re* claim 26, Parker teaches the use of silica at paragraph [0042].

*In re* claims 37-38 the recited limitation(s) are inherently present in Parker because Parker discloses the same claimed structure.

***Claim Rejections - 35 USC § 103***

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. **Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Parker as applied to claim 1 above, and further in view of Hutchinson (US 6,597,721 B1), previously made of record.**

*In re* claim 8, Parker discloses the claimed invention except for a rectangular cross-section in a plane that is parallel to the core. Hutchinson, on the other hand, discloses that photonic bandgap ("PBG") features may have either cylindrical or rectangular shapes. *Hutchinson* at col. 18, lines 15-27. The motivation for using rectangular cross-section in Parker is to achieve more "successful results" according to Hutchinson. *Id.* Therefore, it would have been obvious to one

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of ordinary skill in the art at the time of the claimed invention to obtain the invention specified by claim 8.

***Allowable Subject Matter***

7. Claims 28-35 are allowed.

8. Claims 15-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

With respect to claims 15-22, the primary reason for allowance of the claims is the inclusion of a prism coupler located against the first side of the dielectric core for coupling an optical input beam into dielectric core. In the examiner's opinion, it would not have been obvious to modify the Parker invention to use a prism coupler located against the core absent Applicant's own teachings. With respect to claims 28-35, the primary reason for allowance of the claims is the inclusion of an optical measurement instrument and using the multiple source array to provide an array of optical beams as input to the optical measurement instrument. In the examiner's opinion, it would not have been obvious to combine an optical measurement instrument with the invention of Parker in an identical manner to that recited by claims 28-35, absent Applicant's own teachings.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Omar Rojas whose telephone number is (571) 272-2357. The examiner can normally be reached on Monday-Friday (12:00PM-8:00PM).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick, can be reached on (571) 272-2344. The official facsimile number for regular and After Final communications is (571) 273-8300. The examiner's RightFAX number is (571) 273-2357.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Omar Rojas  
Patent Examiner  
Art Unit 2874

or  
July 10, 2006



Rodney Bovernick  
Supervisory Patent Examiner  
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